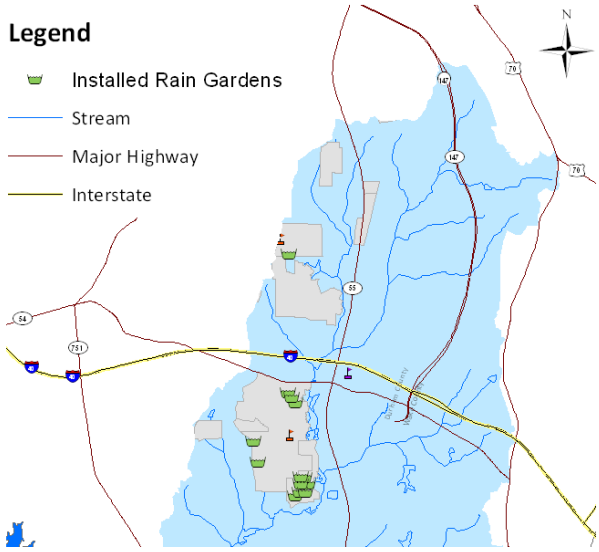
A Report on Water Quality to the Citizens of Durham

The State of Our Streams: 2011

As new rules for water quality continue to evolve, Durham is actively looking for cost-effective ways to attain the goals. In 2011, Stormwater Services received a grant for "rain catchers" project in partnership with other agencies. This project engages local residents for implementing stormwater treatment measures on their property. The project is in a small area of the Ellerbe Creek watershed, which includes Old West Durham and Trinity Heights as well as parts of Walltown, Trinity Park, and Watts Hospital-Hillandale.

The project involves free raingardens and other green practices like rain collection cisterns, native plants and trees, and disconnecting downspouts that are directly connected to storm drains. Residents may also receive money in return for allowing Stormwater Services to install these practices on their lots. Voluntary homeowner participation in implementing these green practices makes Durham a trend-setter in North Carolina. For more information, please contact the Project Manager (Laura Smith) at 919-560-4326.

Stormwater Services has also partnered with the Ellerbe Creek Watershed Association (ECWA), a non-profit organization in Durham dedicated to restoring Ellerbe Creek. Under this program, ECWA is installing rain gardens in backyards of interested homeowners. They also provide workshops and other voluntary programs encouraging environmental stewardship.



Location of completed residential rain gardens in 2011 in the Northeast Creek watershed

Completed residential rain garden by local youth under Mayor's summer youth work program

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Explanation of Watershed Attachments

In order to provide further information to residents, a water quality report is available for each of the major watersheds in the City of Durham. Sections included in each report are as follows:

Water Quality Index (WQI): Federal regulations require the City of Durham to monitor water quality in local streams. Stormwater Services staff collects water samples from streams throughout the city. These samples are then tested for biochemical oxygen demand, nutrients (nitrogen/phosphorus), bacteria, clarity, and metals. These tests allow City and State staff to determine potential risks to people, drinking water supplies, and wildlife.

The results from these chemical tests are combined into one score to provide a broad picture of the health of our streams. The WQI is provided for each monitoring site where enough chemical test results are available.

The WQI can be thought of as a school test grade, numbers close to 100 are an "A" and numbers less than 60 are an "F". Looking at this grade from year to year can show how water quality is changing in area streams.

All urban streams usually fail to meet at least one federal or state water quality standard. However, the water quality index allows residents and Stormwater Services to locate areas with the most serious pollution issues. These areas can be targeted for improvement plans or investigations to find pollution sources.

In 2011, Stormwater Services Staff tested water quality at 28 spots in local streams.

Watershed Information: This section briefly describes the watershed such as location, landuse, or any other notable characteristics of the watershed. These can all influence water quality and are important to know.

Pollution Sources: Stormwater Services staff conduct investigations when City staff or Durham residents report a water quality concern. They also conduct investigations when routine tests indicate a problem. Investigations help find anything other than rain water getting into the storm drain system, streams, or lakes. These are known as illicit discharges, and are a major source of pollution in urban areas. Examples of illicit discharges include: pouring oil into storm drains, disposing of pet wastes in storm drains, and leaking or overflowing sanitary sewer pipes. Pollutions sources found during investigations are included in each watershed's report.

The City has limited staff and resources to improve water quality. Therefore, it is essential that residents become involved and provide extra eyes, ears, and noses to help find and get rid of sources of pollution. Call 560-SWIM to report water pollution.

Dye-testing for sewer lateral break in a tributary of Northeast Creek

The State of Our Streams: 2011

At the end of individual reports, a table is provided that indicates watershed health in terms of:

Clarity: Dirt washed into streams can cause the water to appear cloudy or muddy. One way to measure this is called turbidity. Turbidity measures how bits of dirt scatter light in the water. Turbidity is tested on site in streams. There is a North Carolina water quality standard of 50 Nephelometric Turbidity Units (NTU) for turbidity. Ratings are as follows:

Good: meets state standard
Poor: does not meet standard

Recreation: Many people like to know that their streams are safe for swimming. These uses are impacted by bacteria and viruses. When found, fecal coliform bacteria suggest there is raw sewage (poop!) in a stream. This is a concern because sewage contains viruses, bacteria, and other pathogens that make people and pets sick. Fecal coliform bacteria are measured regularly by Stormwater Services. Fecal coliform bacteria are measured in water samples collected from streams and have two North Carolina water quality standards. They are a geometric mean of 200 colony forming units (cfu) per 100 milliliters (mL) and the number of exceedances of 400 cfu/100mL. Ratings are as follows:

Good: meets both state standards
Fair: meets the geometric mean standard
Poor: does not meet either standard

Stormwater Services staff receives many questions about harmful bacteria. Because of this, the State of Our Streams report provides the recreation indicator as a service to residents of Durham. Stormwater Services cannot issue public health warnings regarding the safe use of area streams and rivers. If you have any questions or concerns about area streams or rivers please contact the Durham County Health Department at 919-560-7800.

Aquatic Life: In addition to chemical tests, Stormwater Services staff also collects aquatic life to learn about water quality. Benthic macroinvertebrates are aquatic organisms that live in the water on roots, under rocks, and under leaves. Since these organisms are exposed to pollution in the stream, the variety found by staff is a good indication of water quality. When organisms that are sensitive to pollution are present and there are fewer pollution tolerant organisms, the overall rating increases. The aquatic life rating is often a more sensitive indicator of overall water quality than the water quality index.

Reference Site: A common method to compare water quality of impacted urban streams is using information from a less-polluted or reference stream. A reference stream can be defined as a relatively undisturbed stream that supports the intended use of water for recreation or as water supply. A reference site typically has good water quality that either meets or exceeds state standards. Stormwater Services maintains three such reference sites,- Flat River, Little River, and New Hope Creek.

2011 Update:
You will notice that some watersheds are not included in the report this year. This is because Stormwater Services has modified the approach for water quality monitoring. Watershed water quality will now be monitored in alternate years while key stations will be monitored every year. This new strategy allows targeting more pollutants at each site, without increasing the monitoring costs.

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The State of Our Streams: 2011

City of Durham

2011 Water Quality Index, City of Durham: 82

This section is an attachment to the State of Our Streams 2011 Report prepared by the City of Durham Stormwater Services. The entire report is available at:
http://durhamnc.gov/ich/op/pwd/storm/Pages/State-of-Our-Streams-Reports.aspx

The City of Durham is situated along a high point between two major river basins, the Cape Fear and the Neuse. Waters from the south and west of the Durham Freeway (NC 147) generally flow to Jordan Lake, the Cape Fear River, and finally the Cape Fear Estuary. Waters north and east of the Durham Freeway flow to Falls Lake, to the Neuse River, and ultimately to Albemarle-Pamlico Sound. Stirrup Iron Creek, also east of NC 147 flows into Crabtree Creek and then to the Neuse River.
Colored areas in the map (page 2) around a stream show the stream's watershed. A watershed is the land area that drains water and the pollution it carries to a stream.
Most Durham streams originate within the city. Because of this, activities in the City play an important role in these streams water quality. Urban areas and industrial activities can lower water quality if not managed properly.

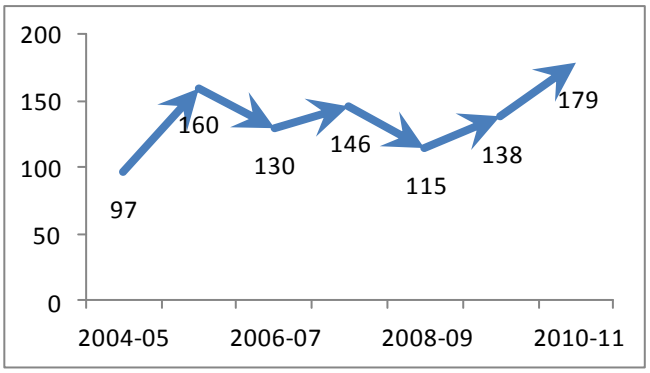
2011 Water Quality Index Results

The water quality index results for 2011 are shown by watershed area on page 3. Areas with poor water quality are red. Dark green shows areas with the best ratings. Yellow indicates some pollution, and light orange through dark orange indicates increasing pollution. Results for fecal coliform bacteria are summarized on page 4. A similar color range shows how polluted each area is with bacteria.

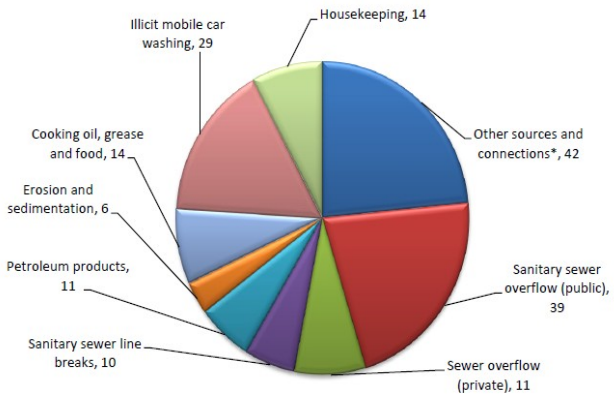
Pollution sources

Stormwater Services staff found **179** pollution sources during investigations from October 2010-September 2011.
In the summer of 2011, Stormwater Services began doing weekend investigations to ensure proper procedures are followed throughout the week.

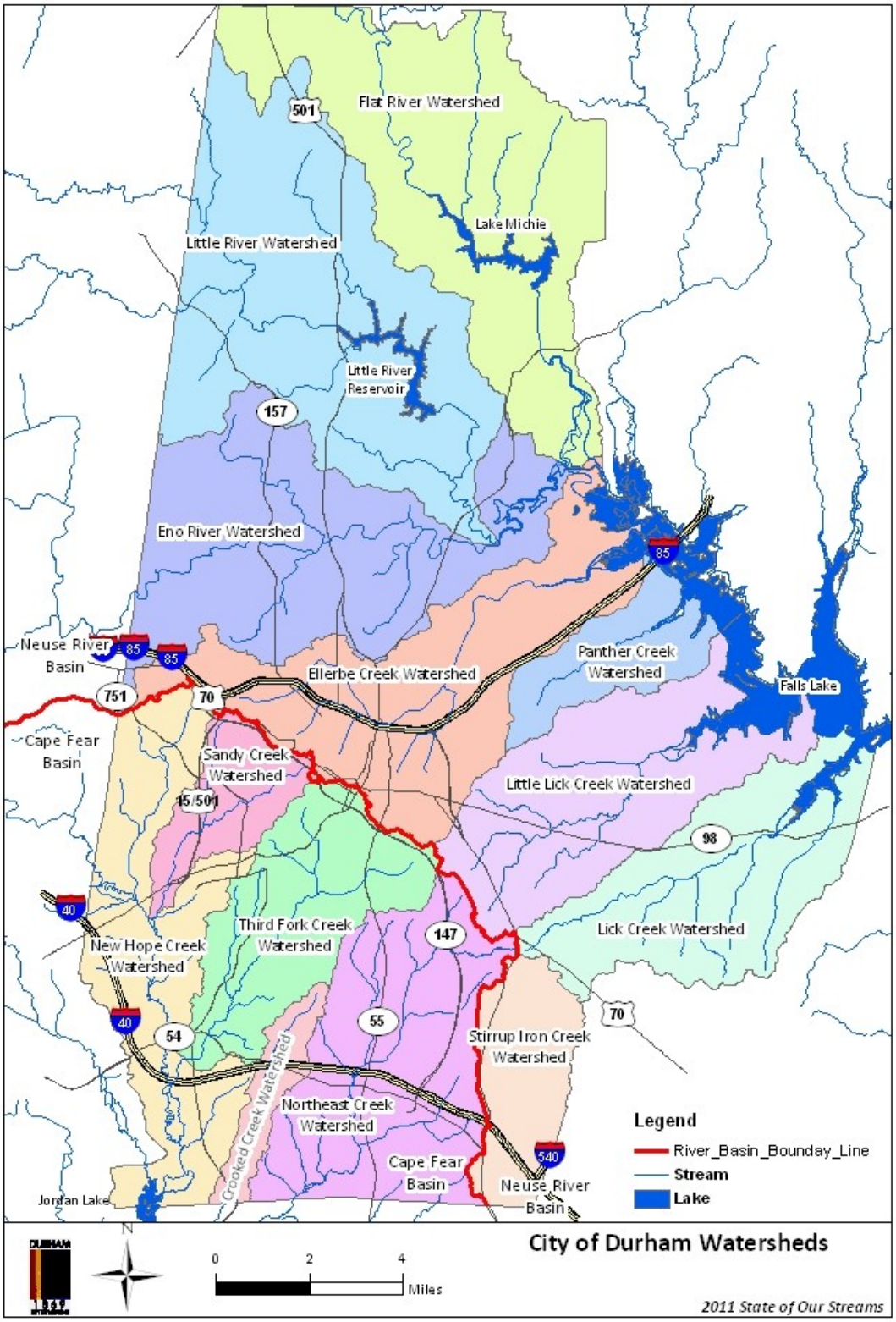
Number of Water Quality Investigations Identifying Pollutant Sources, 2004—2011



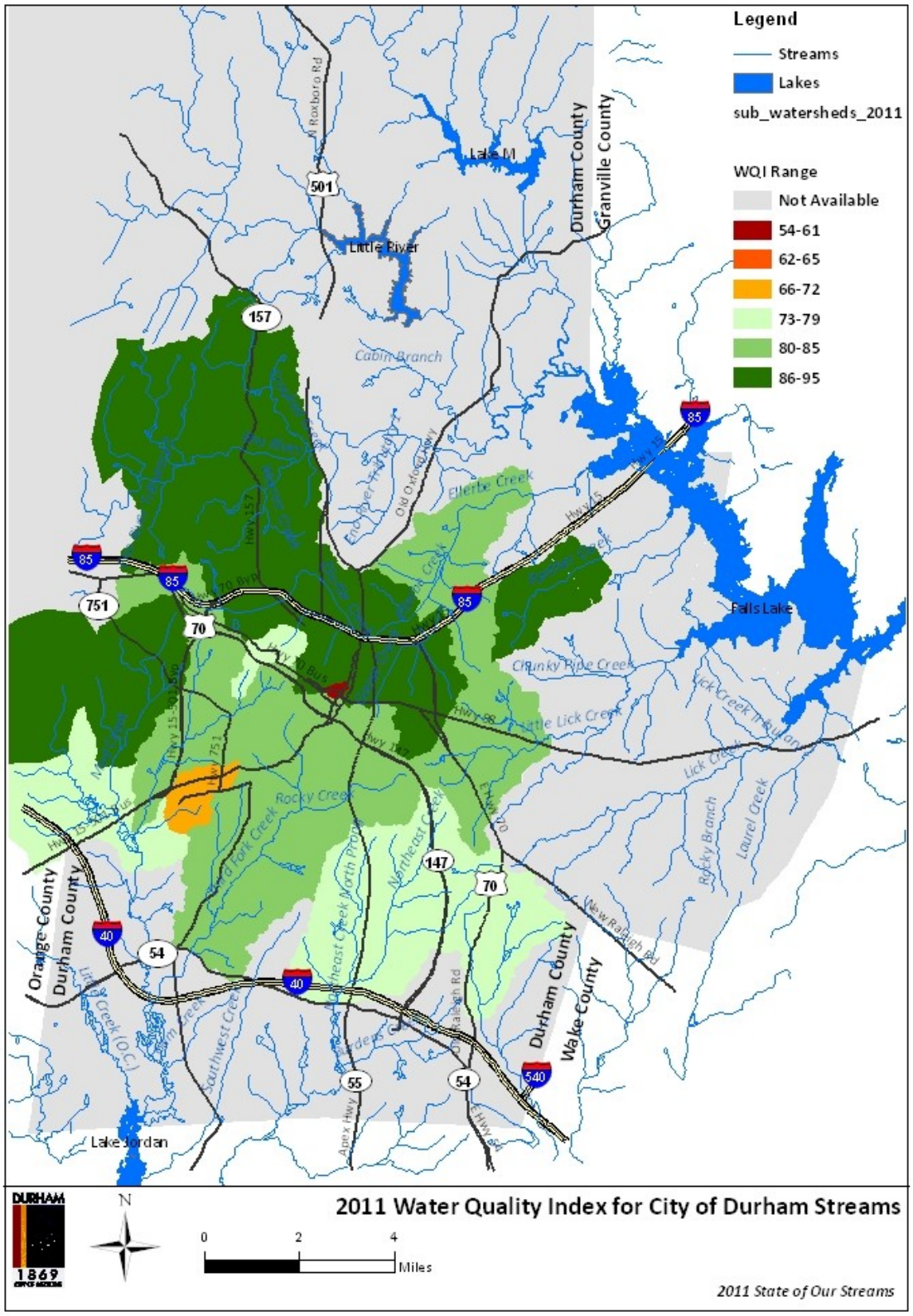
Sources and Types of Pollution Found

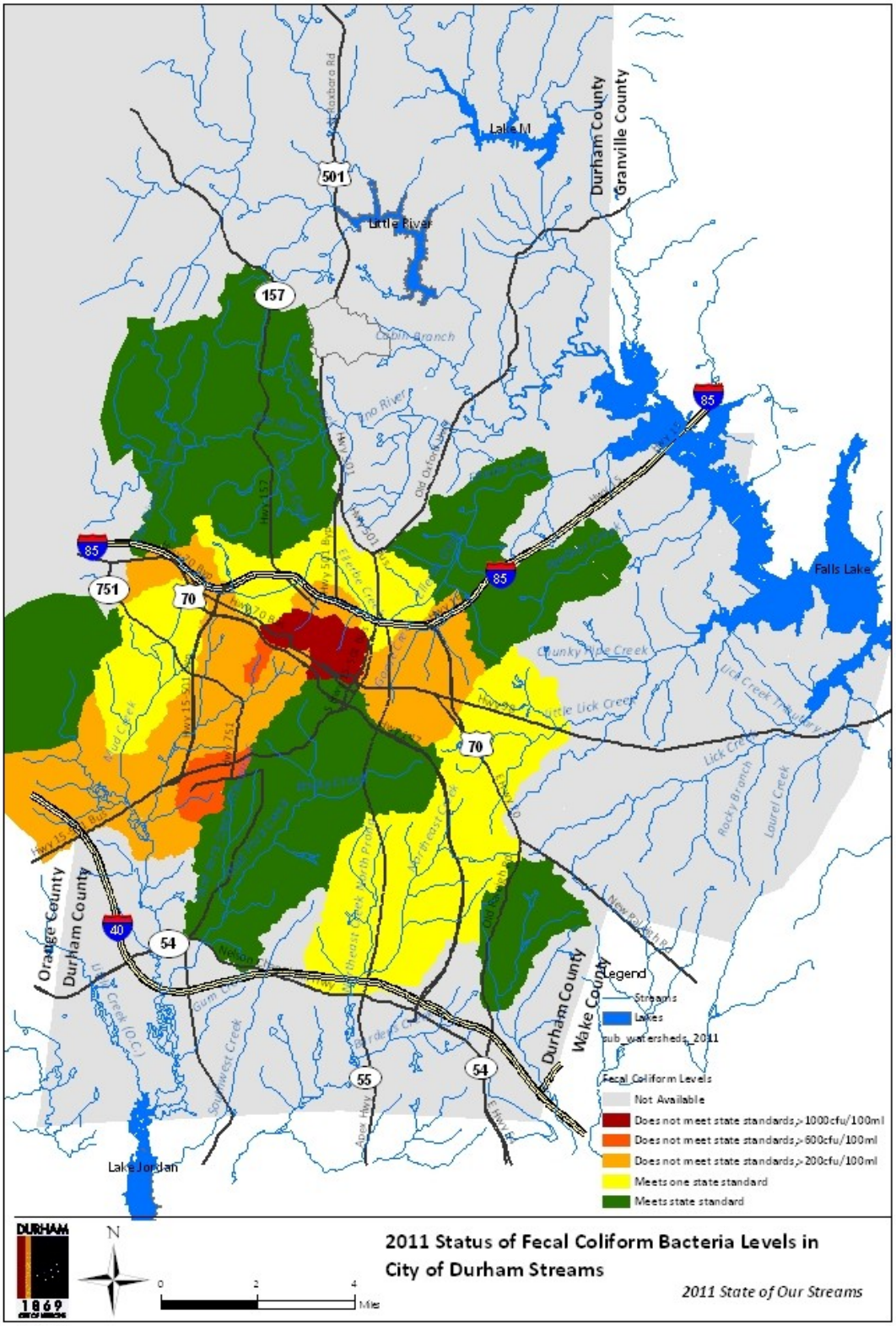


**The other category includes septic systems, illicit connections, yard wastes etc.*


Flat River Watershed
501
Lake Michie
Little River Watershed
Little River Reservoir
157
Eno River Watershed
85
Neuse River Basin
85
85
751
70
Ellerbe Creek Watershed
Panther Creek Watershed
Falls Lake
Cape Fear Basin
Sandy Creek Watershed
15/501
Little Lick Creek Watershed
98
40
Third Fork Creek Watershed
147
Lick Creek Watershed
New Hope Creek Watershed
40
54
55
70
Stirrup Iron Creek Watershed
Crooked Creek Watershed
Northeast Creek Watershed
Cape Fear Basin
540
Neuse River Basin
Jordan Lake
Legend
River_Basin_Bounday_Line
Stream
Lake
N
0
2
4
Miles
City of Durham Watersheds
2011 State of Our Streams

The State of Our Streams: 2011




Lake M
Durham County
Granville County
501
Little River
157
Cabin Branch
Eno River
85
751
70
Falls Lake
Chunky Pine Creek
Little Lick Creek
Lick Creek
Rocky Branch
Laurel Creek
Orange County
Durham County
40
54
Lake Jordan
55
Wake County
Legend
Streams
Lakes
sub_watersheds_2011
Fecal Coliform Levels
Not Available
Does not meet state standards,>1000cfu/100ml
Does not meet state standards,>600cfu/100ml
Does not meet state standards,>200cfu/100ml
Meets one state standard
Meets state standard
DURHAM
1869
N
0
2
4
Miles
2011 Status of Fecal Coliform Bacteria Levels in City of Durham Streams
2011 State of Our Streams

The State of Our Streams: 2011

Ellerbe Creek Watershed (Neuse River Basin)

Ellerbe Creek Watershed 2011 Water Quality Index: **80**

This section is an attachment to the State of Our Streams 2011 Report prepared by the City of Durham Stormwater Services. The entire report is available at:
http://durhamnc.gov/ich/op/pwd/storm/Pages/publications.aspx

The Ellerbe Creek watershed includes the downtown area north of Highway 147. City Hall is located in this watershed, as well as neighborhoods such as Trinity Park and Old Five Points. Commercial areas include North Pointe, Northgate Mall and Ninth Street. Partnerships with other agencies and non-profit groups (e.g., Ellerbe Creek Watershed Association) have resulted in several stream restoration projects along Ellerbe Creek.

Water from Ellerbe Creek flows to Falls Lake, the Neuse River, and the Albemarle-Pamlico Sound before reaching the Atlantic Ocean.

The water quality index shows a continued overall improvement in the Ellerbe Creek watershed, when compared to previous years. Both bacteria and dissolved oxygen levels showed improvement from 2010. Nitrogen and phosphorus improved slightly along the main channel, except the location at Glenn Road.

This site is located downstream of the North Durham Water Reclamation Facility, which is currently undergoing rehabilitation and construction. Higher nutrients are likely due to taking treatment basins out of service for rehabilitation.

As in previous years, the Creek exhibited poorest water quality during peak summer months of July and August. Goose Creek at Holloway St was an exception with the poorest water quality in April, due to high bacteria and copper levels. South Ellerbe Creek at the corner of Foster and Hunt Streets exhibited poor water quality all year. This has been due to high copper and zinc levels, which is traced back to a cooling system and a decorative fountain in the downtown area.

Minor Fish Kill due to gasoline spill in June 2011 in a tributary of Ellerbe Creek

Pollution sources

Stormwater Services staff conducted Investigations that identified **61** pollution sources in the Ellerbe Creek watershed during 2010-2011. A higher number is indicative of the weekend enforcement patrol results.

Number of pollution sources found: 61
Number of sanitary sewer overflows: 11
Number of illicit mobile car washing discharges: 10

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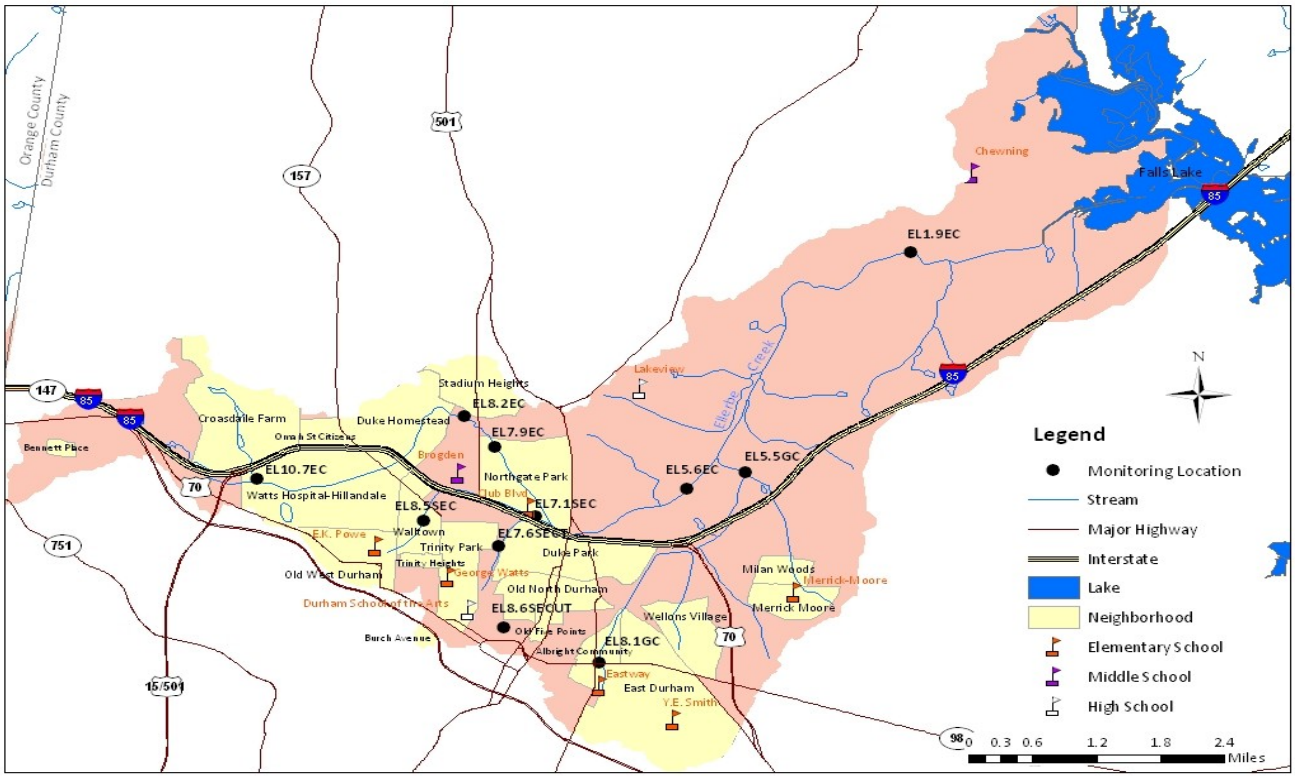
Ellerbe Creek Watershed (Neuse River Basin)



Waterbody	2011 WQ Index	Turbidity/ Clarity	Bacteria/ Recreation	Aquatic Life
Ellerbe Creek at Glenn Rd (EL1.9EC)	81	Good	Good	Fair
Ellerbe Creek at Midland Terr (EL5.6EC)	86	Good	Fair	Poor
Ellerbe Creek at Murray Ave (EL7.9EC)	87	Good	Fair	Poor
Ellerbe Creek at Stadium Dr (EL8.2EC)	—	Good	Fair	Poor
Ellerbe Creek at Bellevue Ave (EL10.7EC)	85	Good	Poor	—
Goose Creek at Camden Ave (EL5.5GC)	87	Good	Poor	Poor
Goose Creek at Holloway St (EL8.1GC)	82	Good	Poor	—
South Ellerbe Creek at Glendale Ave (EL7.1SEC)	—	Good	Poor	—
South Ellerbe Creek (EL7.6SECT)	—	Good	Poor	—
South Ellerbe Creek (EL8.5SEC)	76	Good	Poor	—
South Ellerbe Creek (EL8.6SECUT)	59	Good	Poor	—

The State of Our Streams: 2011

Eno River Watershed (Neuse River Basin)

Eno River Watershed 2011 Water Quality Index: **98**

This section is an attachment to the State of Our Streams 2011 Report prepared by the City of Durham Stormwater Services. The entire report is available at:
http://durhamnc.gov/ich/op/pwd/storm/Pages/publications.aspx

The Eno River watershed extends through the Town of Hillsborough and Orange County before reaching the City of Durham. Much of the northern portion of the City of Durham is located in the Eno River Watershed. Land use in the area includes typical suburban development as well as commercial and industrial areas. A significant portion of the land around the Eno River is protected in parks, including the Penny's Bend Nature Preserve and West Point on the Eno Park.

Water from the Eno River flows to Falls Lake, the Neuse River, and the Albemarle-Pamlico Sound before reaching the Atlantic Ocean.

As discussed earlier, the new monitoring strategy puts watersheds on an alternate year rotation but allows more comprehensive water quality monitoring. Eno River at Roxboro Road was the only station monitored during 2011. The overall water quality at this location continues to be very good, similar to previous years.

Clean Water begins with you !

It should be noted that comparisons with previous years cannot be made for the whole watershed. All stations in the Eno River watershed are being monitored in the 2012 cycle.

Nitrogen and phosphorus loads at Roxboro Road are 1.56 and 0.35 pounds per watershed acre, respectively. While nitrogen load is lower, phosphorus load is higher compared to 2010.

Eno River at Snow Hill Road, an aquatic life (benthic macroinvertebrate) sampling site

Pollution sources

Stormwater Services investigations of potential sources of water pollution in the Eno River watershed during 2010-2011 found problems **24** times.

Number of pollution sources found: 24
Number of sanitary sewer overflows: 5
Number of grease, cooking oil, and food discharges: 8

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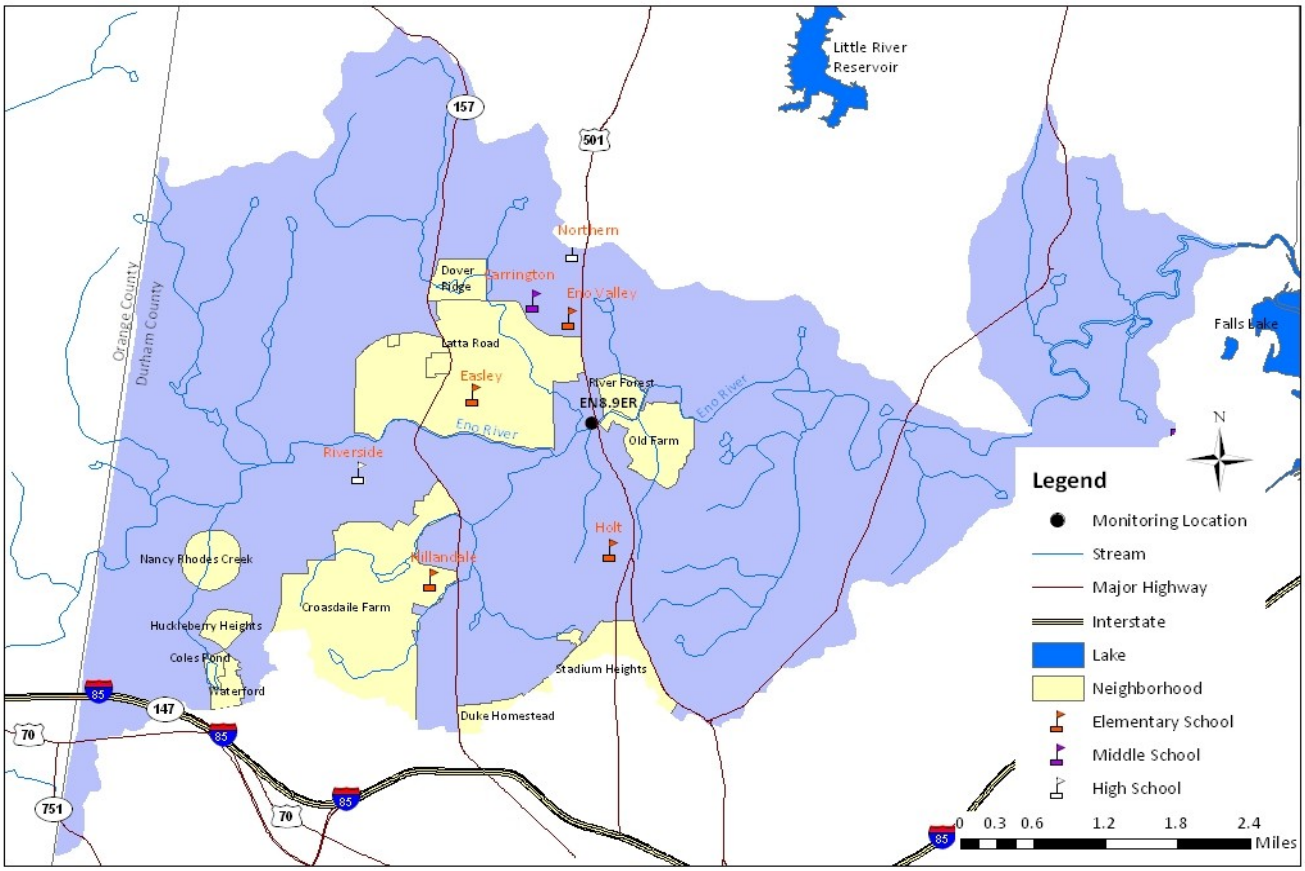
Eno River Watershed (Neuse River Basin)



Waterbody	2011 WQ Index	Turbidity/ Clarity	Bacteria/ Recreation	Aquatic Life
Eno River at Snow Hill Rd (EN4.9ER)	—	—	—	Good-Fair
Eno River at Roxboro Rd (EN8.9ER)	98	Good	Good	Good-Fair

What can I do to protect water quality?
(Tip #1)

Keep trees and shrubs growing along stream banks as buffer zones to filter soil and pollution from entering waterways.

The State of Our Streams: 2011

Little Lick Creek Watershed (Neuse River Basin)

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Little Lick Creek Watershed 2011 Water Quality Index: 80

This section is an attachment to the State of Our Streams 2011 Report prepared by the City of Durham Stormwater Services. The entire report is available at http://durhamnc.gov/ich/op/pwd/storm/Pages/publications.aspx

The Little Lick Creek watershed includes areas east of the city limits between US Highway 70 and Falls Lake. North Carolina Highway 98 and US Highway 70 are prominent features of this watershed.

Water from Little Lick Creek flows to Falls Lake, the Neuse River, and the Albemarle-Pamlico Sound before reaching the Atlantic Ocean.

The only station monitored in this watershed in 2011 was at Mineral Springs Road. The overall water quality at this station seems to be better compared to 2010. While bacteria levels and water clarity were better this year, nitrogen and phosphorus levels did not change.

Copper levels continue to meet the EPA standards, which supports the idea that high levels in 2009 were likely from a temporary source. All three stations in Little Lick Creek will be monitored in the 2012 cycle.

Little Lick Creek, upstream of monitoring station at Mineral Springs Road

Be the solution to pollution!

Help Stop Stormwater Pollution!
Call 560-SWIM to report anything in creeks or storm drains that is not water!

Pollution sources

Stormwater Services staff investigated and found **19** pollution sources in the Little Lick Creek watershed during 2011.

Number of pollution sources found: 19
Number of sanitary sewer overflows: 7
Number of housekeeping issues: 3

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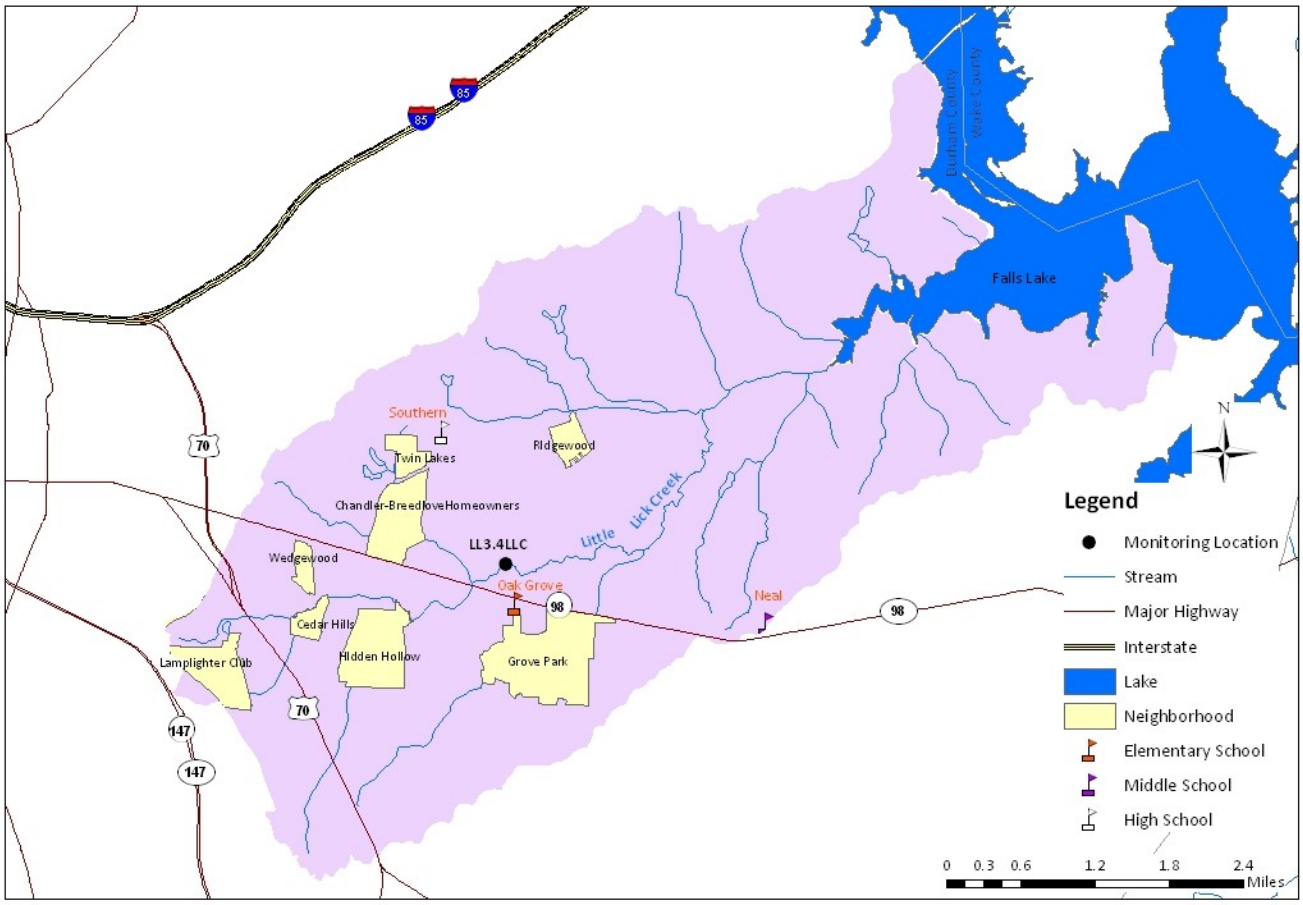
Little Lick Creek Watershed (Neuse River Basin)



Waterbody	2011 WQ Index	Turbidity/ Clarity	Bacteria/ Recreation	Aquatic Life
Little Lick Creek at Mineral Springs Rd (LL3.4LLC)	80	Good	Fair	Poor

What can I do to protect water quality? *(Tip #2)*

Pick up pet waste and dispose it of with the trash.

The State of Our Streams: 2011

Panther Creek Watershed (Neuse River Basin)

Panther Creek Watershed 2011 Water Quality Index: **86**

This section is an attachment to the State of Our Streams 2011 Report prepared by the City of Durham Stormwater Services. The entire report is available at http://durhamnc.gov/ich/op/pwd/storm/Pages/publications.aspx

The Panther Creek watershed is located in the northeastern part of Durham, south of Geer Street. The Panther Creek watershed remains relatively less developed, although this is rapidly changing as new commercial and residential construction projects have begun south of Interstate-85.

Water from Panther Creek flows to Falls Lake, the Neuse River, and the Albemarle-Pamlico Sound before reaching the Atlantic Ocean.

The water quality index shows an improvement after continuous decline since 2008. Bacteria and water clarity showed great improvement with no violations of state standards. Dissolved oxygen, nitrogen, and phosphorus were almost same as last year.

This is a relatively small watershed and the stream frequently goes dry. No samples could be collected from August through October of 2011. Because of its small size and tendency to dry up, Panther Creek is heavily influenced by the change in seasons.

Panther Creek at Burton Road

Panther Creek under dry conditions

Pollution sources

Stormwater Services investigations did not find any pollution sources in the Panther Creek watershed during the October 2010 to September 2011 period.

Number of pollution sources found: 0

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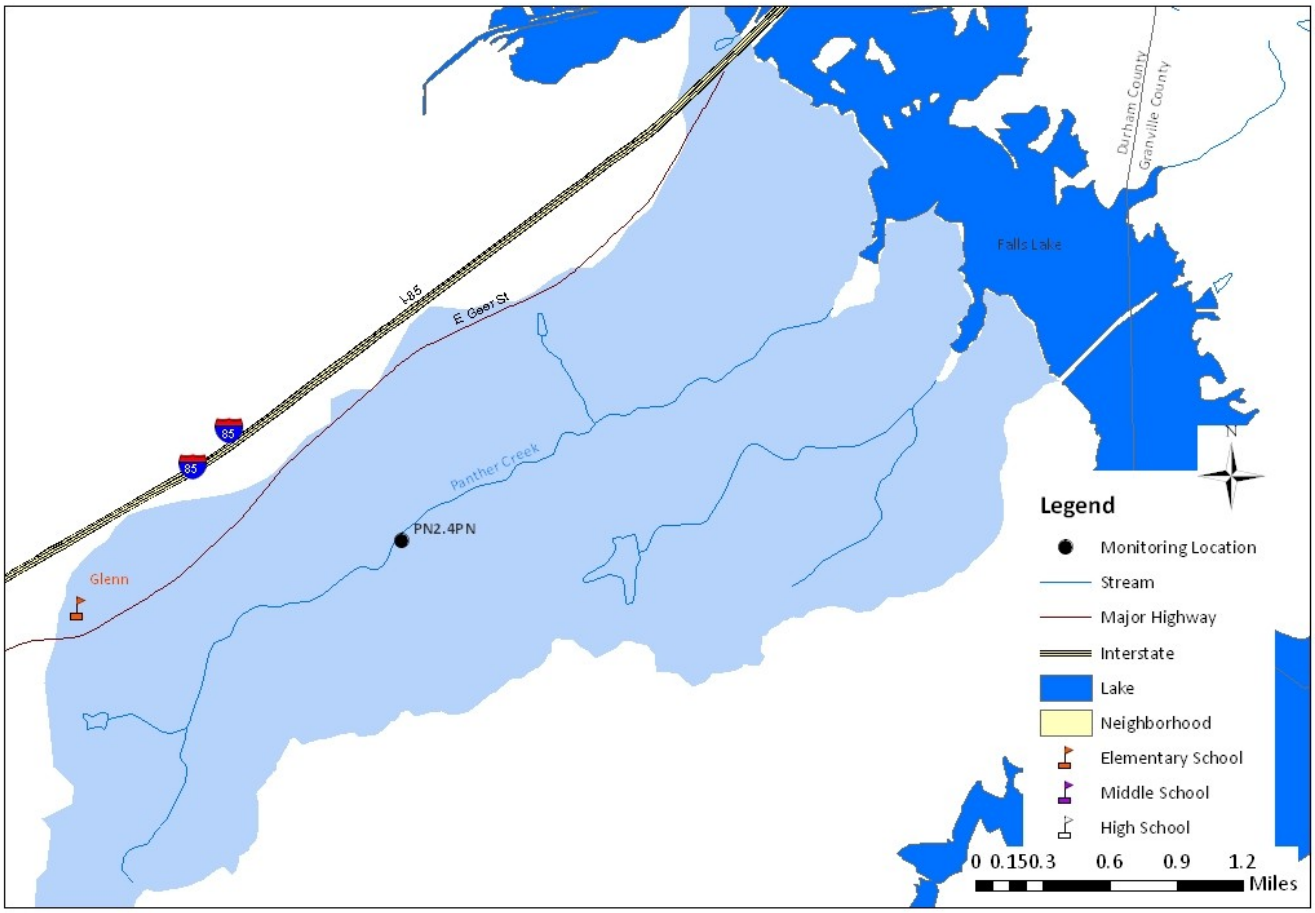
Panther Creek Watershed (Neuse River Basin)



Waterbody	2011 WQ Index	Turbidity/ Clarity	Bacteria/ Recreation	Aquatic Life
Panther Creek at Burton Rd (PN2.4PN)	86	Good	Good	Poor

What can I do to protect water quality? *(Tip #3)*

Do not leave grass clippings or yard waste along curbs or ditches. Compost or use yard waste carts.

The State of Our Streams: 2011

Stirrup Iron Creek Watershed (Neuse River Basin)

Stirrup Iron Creek Watershed 2011 Water Quality Index: **77**

This section is an attachment to the State of Our Streams 2011 Report prepared by the City of Durham Stormwater Services. The entire report is available at http://durhamnc.gov/ich/op/pwd/storm/Pages/publications.aspx

The Stirrup Iron Creek watershed lies east of Miami Boulevard in Research Triangle Park, and continues north to US Highway 70. A portion of the watershed lies within Durham County. The station at Chin Page Road continues to be monitored.

Water from Stirrup Iron Creek flows to Lake Crabtree, Crabtree Creek, the Neuse River, and the Albemarle-Pamlico Sound before reaching the Atlantic Ocean.

Bacteria and water clarity showed improvement with no incidents of violating water quality standards. Nitrogen and phosphorus did not show any changes. Stirrup Iron Creek has a relatively flat streambed, which limits the chance that oxygen in the air has to mix with water. Thus, low dissolved oxygen levels in the water still exist. Copper levels continue to exceed EPA standards but are also better than 2009 and 2010 levels.

Clean Water, Everyone's Business!

Stirrup Iron Creek downstream of Chin Page Road

Help Stop Stormwater Pollution!
Call 560-SWIM to report anything in creeks or storm drains that is not water!

Pollution sources

Stormwater Services identified 4 pollution sources during investigations in the Stirrup Iron Creek watershed during 2011.

Number of pollution sources found: 4
Number of illicit mobile car washing discharges: 3
Other sources: 1

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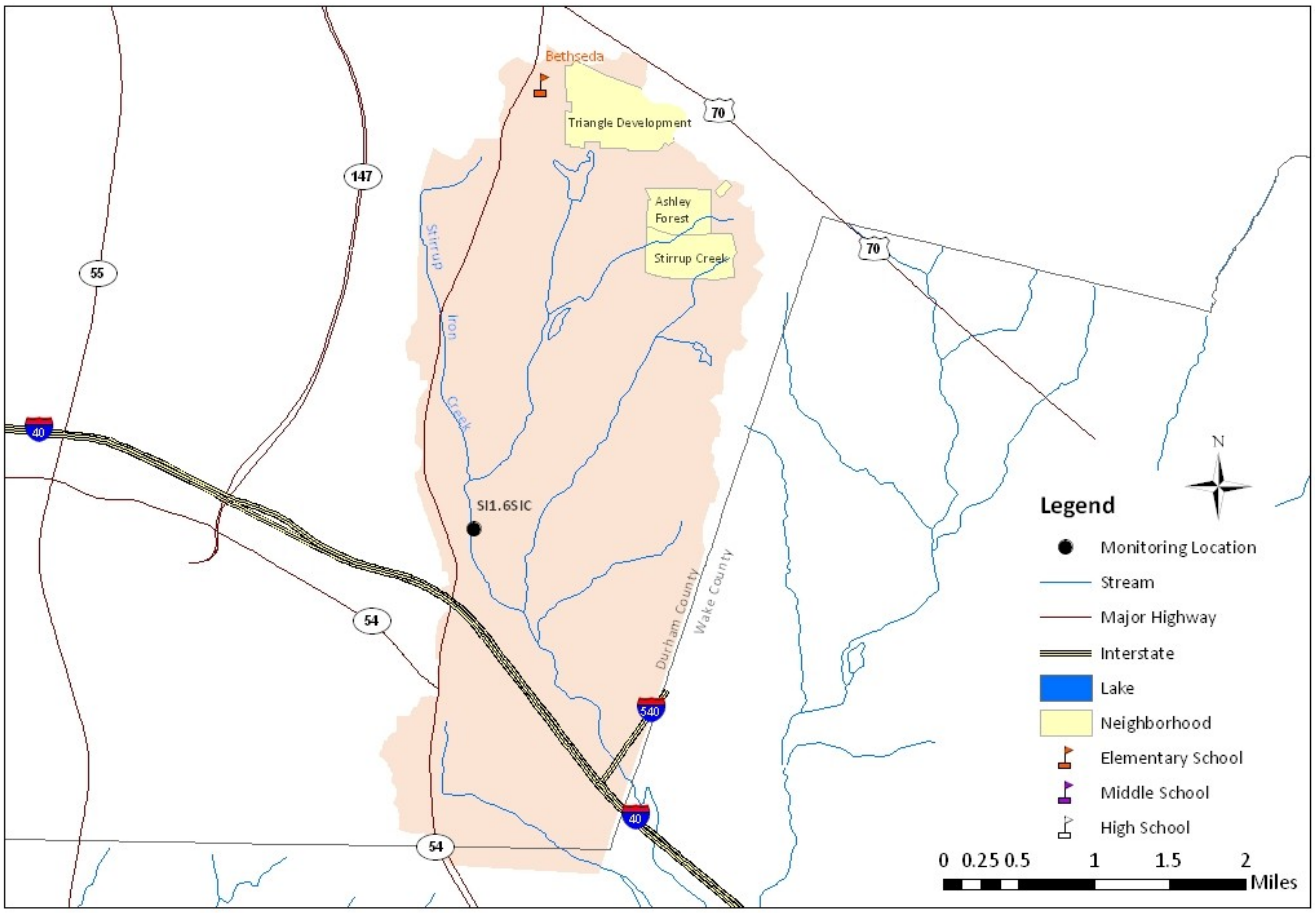
Stirrup Iron Creek Watershed (Neuse River Basin)



Waterbody	2011 WQ Index	Turbidity/ Clarity	Bacteria/ Recreation	Aquatic Life
Stirrup Iron Creek at Chin Page Rd (SI1.6SIC)	**77**	Good	Good	—

What can I do to protect water quality?
(Tip #4)

Take vehicles to a commercial car wash where the wash water is treated and/or recycled.

The State of Our Streams: 2011

Crooked Creek Watershed (Cape Fear River Basin)

Crooked Creek Watershed 2011 Water Quality Index: **82**

This section is an attachment to the State of Our Streams 2011 Report prepared by the City of Durham Stormwater Services. The entire report is available at http://durhamnc.gov/ich/op/pwd/storm/Pages/publications.aspx

The Crooked Creek watershed is in the southern portion of the City, somewhat bounded by Fayetteville Street to the west and north, Barbee Road to the east, and Herndon Road to the south. Crooked Creek is also known as Southwest Creek. Similar to Panther Creek, Crooked Creek is one of the smaller watersheds in the City of Durham.

Water from Crooked Creek flows to Jordan Lake and the Cape Fear River before reaching the Atlantic Ocean.

The water quality index was calculated for the first time in this watershed. This was possible due to the rotational monitoring, which has allowed expanded analysis to include nutrients and metals. Compared to 2010, bacteria levels are better and dissolved oxygen is worse.

A Crooked Creek watershed improvement plan is being developed with the Northeast Creek watershed improvement plan. All the fieldwork required for the plan was completed in September of 2011. This involved assessing stormwater control measures and stream banks and buffers. The information was used to identify new and potential improvement opportunities. The plan is scheduled to be completed by the end of summer 2012.

Crooked Creek at Scott King Road

Be the solution to pollution!

Pollution sources

Stormwater Services staff investigations found **2** pollution source in the Crooked Creek watershed during 2011.

For more information on City stormwater activities, visit our website at http://www.durhamnc.gov/stormwater or call Stormwater Services at 560-4326.

Number of pollution sources found: 2
Number of sanitary sewer overflows: 1
Number of petroleum release: 1

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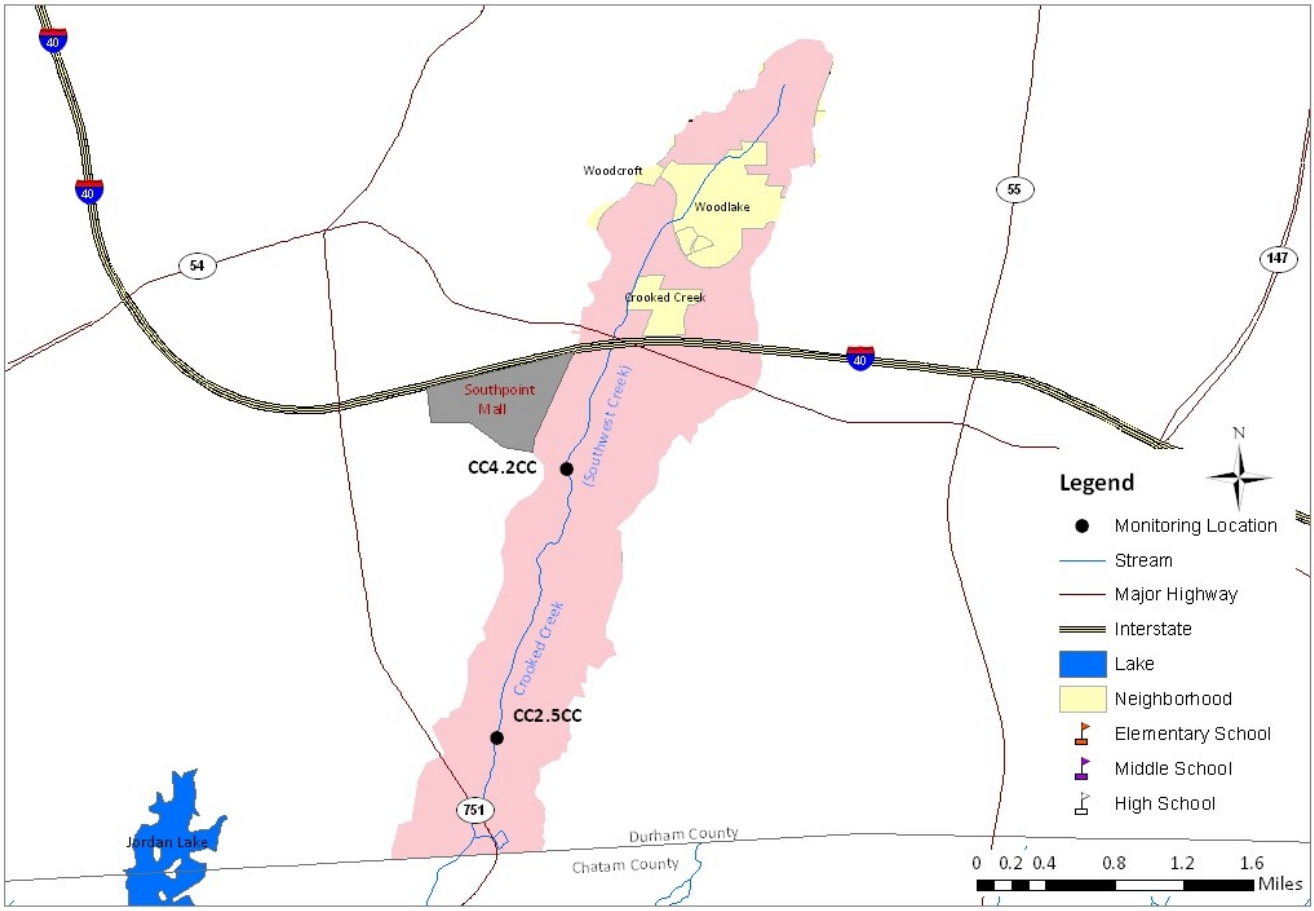
Crooked Creek Watershed (Cape Fear River Basin)



Waterbody	2011 WQ Index	Turbidity/ Clarity	Bacteria/ Recreation	Aquatic Life
Crooked Creek at Scott King Rd (CC2.5CC)	85	Good	Good	—
Crooked Creek at Massey Chapel Rd (CC4.2CC)	79	Good	Fair	—

The State of Our Streams: 2011

New Hope Creek Watershed (Cape Fear River Basin)

New Hope Creek Watershed 2011 Water Quality Index: **81**

This section is an attachment to the State of Our Streams 2011 Report prepared by the City of Durham Stormwater Services. The entire report is available at http://durhamnc.gov/ich/op/pwd/storm/Pages/publications.aspx

Most of the New Hope Creek watershed lies within Orange County and includes the Town of Chapel Hill. A portion of the Duke University campus and commercial areas such as South Square are in this part of Durham. The watershed also covers the southwestern part of Durham County.

Water from New Hope Creek flows to Jordan Lake and the Cape Fear River before reaching the Atlantic Ocean.

In 2011, overall water quality of New Hope Creek declined slightly, particularly at Chapel Hill Road close to the Hope Valley area. Bacteria and dissolved oxygen levels at this location are worse compared to last year. The reference site at Turkey Farm Road continues to exhibit best water quality in this watershed. Sandy Creek tributary showed an improvement when compared to 2010. However, Tributary A at Ivy Creek Boulevard and Tributary D at Duke University Road both had poor water quality with the highest bacteria levels in the watershed.

In 2011, nitrogen and phosphorus loads in Sandy Creek at Cornwallis Road are estimated to be 2.68 and 0.44 pounds per watershed acre, respectively. Phosphorus loads are similar to last year while nitrogen loads in 2011 are lower.

Mud Creek at Pickett Road, an aquatic life (benthic macroinvertebrate) sampling site

Clean Water begins with you !

Pollution sources

Stormwater Services staff identified **20** pollution sources in the New Hope Creek watershed during 2011 investigations.

The sources of pollution identified during these investigations include sanitary sewer breaks and overflows, and illicit mobile car wash discharges.

Number of pollution sources found: 20
Number of illicit mobile car washing discharges: 6
Number of private sewer lateral overflows: 4

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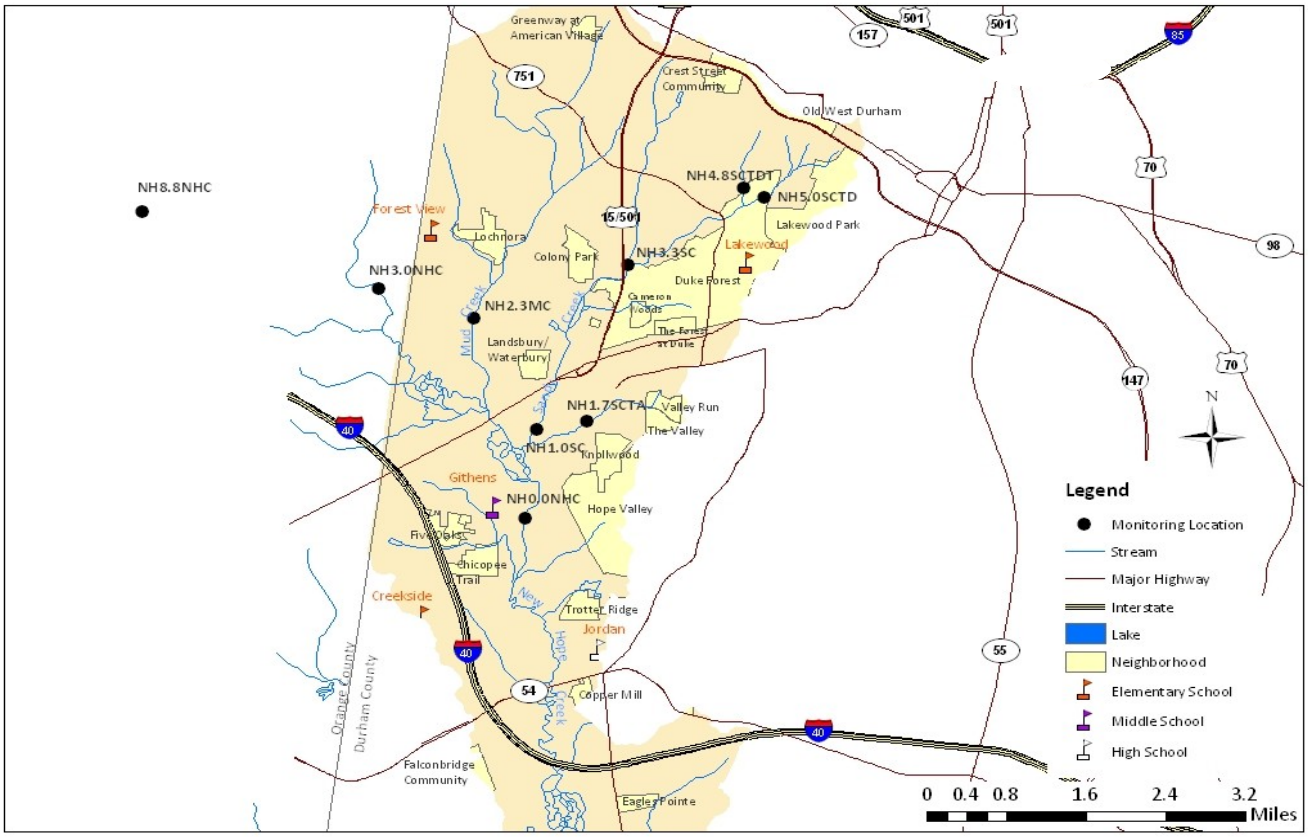
New Hope Creek Watershed (Cape Fear River Basin)



Waterbody	2011 WQ Index	Turbidity/ Clarity	Bacteria/ Recreation	Aquatic Life
New Hope Creek at Chapel Hill Rd (NH0.0NHC)	75	Good	Fair	—
New Hope Creek at Erwin Rd (NH3.0NHC)	89	Good	Good	—
New Hope Creek at Turkey Farm Rd (NH8.8NHC)*	92	Good	Good	Good-Fair
Mud Creek at Pickett Rd (NH2.3MC)	86	Good	Fair	Fair
Sandy Creek at Garrett Rd (NH1.0SC)	83	Good	Poor	Poor
Sandy Creek at Cornwallis Rd (NH3.3SC)	81	Good	Poor	—
Sandy Creek Tributary A at Ivy Creek Blvd (NH1.7SCTA)	70	Good	Poor	—
Sandy Creek Tributary D at Duke University Rd (NH4.8SCTDT)	73	Good	Poor	—
Sandy Creek Tributary D at Anderson St (NH5.0SCTD)	83	Good	Poor	—

*Reference site

The State of Our Streams: 2011

Northeast Creek Watershed (Cape Fear River Basin)

Northeast Creek Watershed 2011 Water Quality Index: **79**

This section is an attachment to the State of Our Streams 2011 Report prepared by the City of Durham Stormwater Services. The entire report is available at http://durhamnc.gov/ich/op/pwd/storm/Pages/publications.aspx

The Northeast Creek watershed is located in the southeastern portion of the city. The watershed includes a large portion of Research Triangle Park's industrial areas. The lower watershed contains large areas of protected lands, including the game lands associated with Jordan Lake.

Water from Northeast Creek flows to Jordan Lake and the Cape Fear River before reaching the Atlantic Ocean.

Water quality monitoring at Northeast Creek was under the "off" rotation this year, except one key station on North Prong at Meridian Parkway. The water quality at this station was similar to last year with no noticeable changes.

The watershed improvement plan for Northeast Creek made significant progress in 2011. All the field work required for the plan was completed in September 2011. This involved assessing over 200 stormwater control measures and over 60 stream miles to identify new and potential improvement opportunities. Stormwater Services is finishing the last components of the plan; the plan is scheduled to be complete by the end of summer 2012.

Clean Water, Everyone's Business!

Installed residential raingarden in Northeast watershed

Stormwater Services completed installation of sixteen residential raingardens on twelve properties in 2011. The residential rain garden program received a great response from residents. The project was funded by a section 319 grant.

This rain garden project also used the Mayor's summer youth program. This project provided students with "green jobs" training.

Pollution sources

Stormwater Services staff investigations found **7** pollution sources in the Northeast Creek watershed during 2011.

Number of pollution sources found: 7
Number of sanitary sewer overflows: 3
Number of private sewer discharges: 2

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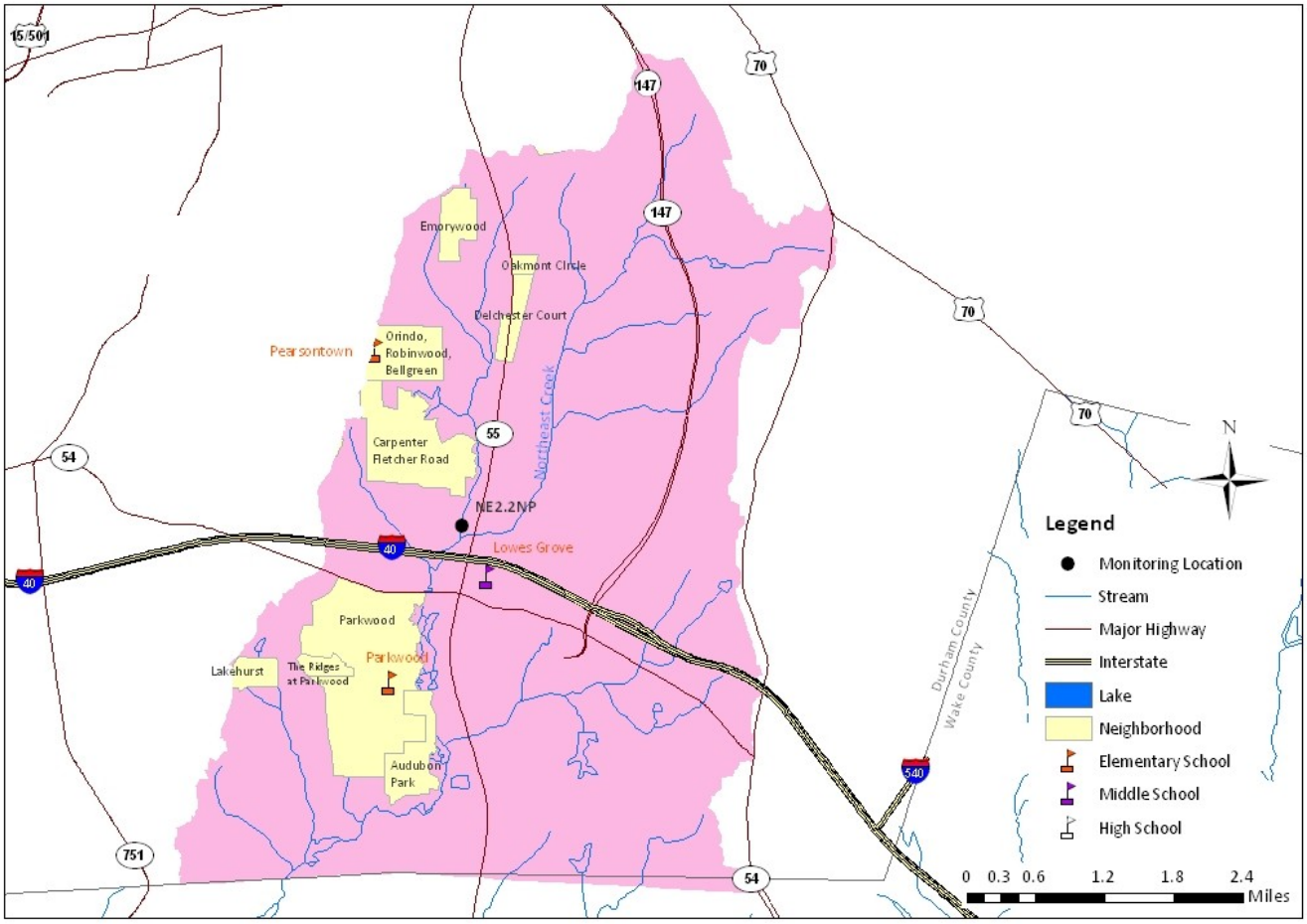
Northeast Creek Watershed (Cape Fear River Basin)



Waterbody	2011 WQ Index	Turbidity/ Clarity	Bacteria/ Recreation	Aquatic Life
North Prong at Meridian Pkwy (NE2.2NP)	79	Good	Fair	—

The State of Our Streams: 2011

Third Fork Creek Watershed (Cape Fear River Basin)

Third Fork Creek Watershed 2011 Water Quality Index: **84**

This section is an attachment to the State of Our Streams 2011 Report prepared by the City of Durham Stormwater Services. The entire report is available at http://durhamnc.gov/ich/op/pwd/storm/Pages/publications.aspx

The Third Fork Creek watershed drains the area south of the Durham Freeway. The watershed includes headwaters near Forest Hills and NC Central University and continues southeasterly through Hope Valley to Woodcroft. The watershed is entirely within the City of Durham.

Water from Third Fork Creek flows to Jordan Lake and the Cape Fear River before reaching the Atlantic Ocean.

Only one station at Highway 54, which is close to the watershed outlet, was monitored in 2011. Water quality at this station shows improvement from last year with no water quality standard violations.

A watershed management plan and implementation strategy for the Third Fork Creek watershed is scheduled to be completed by the end of 2012. A public meeting was held to update the local citizens about the plan and receive their input. Several projects have been identified that will help improve water quality.

The Third Fork Creek watershed was also included in the Section 319 grant for installing residential rain gardens. Stormwater Services has received a great response from residents interested in getting a rain garden installed on their property. The site selection process is underway and construction is expected to start in the summer.

Illegal Paint Discharge in Tributary of Third Fork Creek at Rockwood Park

Nitrogen and phosphorus loads at Highway 54 are 1.98 and 0.21 pounds per watershed acre, respectively. Both are lower than last years load.

Pollution Sources

Stormwater Services staff investigations found **39** pollution sources in the Third Fork Creek watershed during 2010-2011.

The sources of pollution identified during these investigations include sanitary sewer overflows, petroleum, and illicit mobile car wash discharges.

Number of pollution sources: 39
Number of sanitary sewer overflows: 10
Number of illicit mobile car washing discharges: 6

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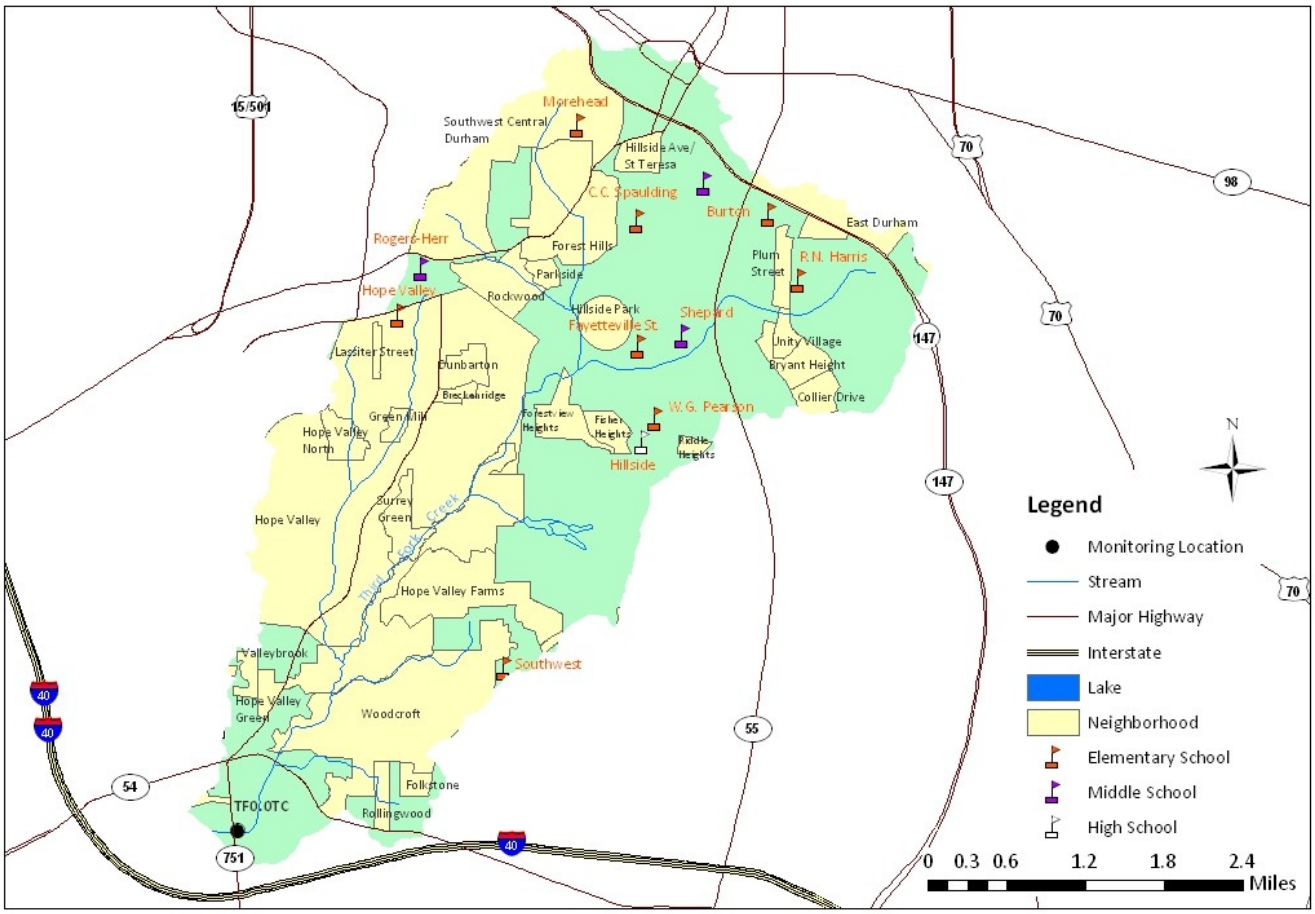
Third Fork Creek Watershed (Cape Fear River Basin)



Waterbody	2011 WQ Index	Turbidity/ Clarity	Bacteria/ Recreation	Aquatic Life
Third Fork Creek at Highway 54 (TF0.0TC)	84	Good	Good	Poor